



MAP4C Exam Review

Answer these questions on a separate page:

1. Which equations model quadratic relations?

i) $y = 2.4x^2 - 145.2$

ii) $y = 2.4 - 4.6x$

iii) $y = -145.2x^2$

2. Express as a radical and then evaluate:

a) $8^{\frac{5}{3}}$

b) $8^{\frac{2}{3}}$

3. Solve the equation $6^{2x} = 6^8$

4. Juno makes and sells CDs for her band. The cost, C dollars, to produce n CDs is given by $C = 320 + 7n$. Determine the cost of making 150 CDs.

5. Which table of values corresponds to the equation $y = 5(4)^x$?

Table 1:

x	y
0	1
1	4
2	16
3	64
4	256
5	1024
6	4096

Table 2:

x	y
0	4
1	20
2	100
3	500
4	2500
5	12 500
6	62 500

Table 3:

x	y
0	5
1	20
2	80
3	320
4	1280
5	5120
6	20 480

6. Joaquim is making a budget for one year. From May to August, Joaquim works full-time and earns a take-home salary of \$500 a week. From September to April, Joaquim goes to college and works part-time earning a take-home salary of \$250 a week. Joaquim's tuition for one year is \$4200. He expects to spend \$1100 on books and supplies. His fixed monthly expenses are \$490 a month for rent and utilities and \$65 a month for a bus pass. How much will Joaquim have available for other expenses each month?

7. Which equations model exponential relations?

i) $y = 6(7)^x$

ii) $y = 6x + 7$

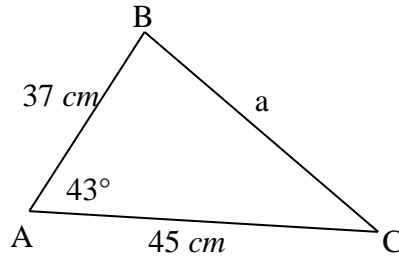
iii) $y = 7 + 6x^2$

8. Determine the number of compounding periods.

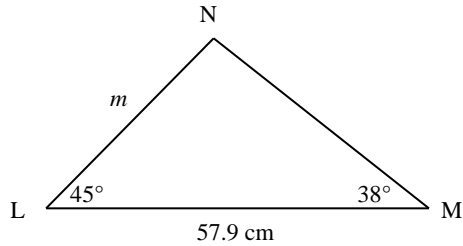
Time of payment	Length of Annuity	Interest rate per year	Frequency of compounding
end of every 6 months	13 years	18.2%	semi-annually

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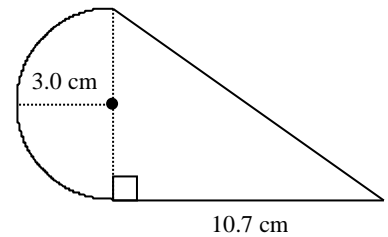
9. Calculate the length of side a .



10. Determine the indicated length.

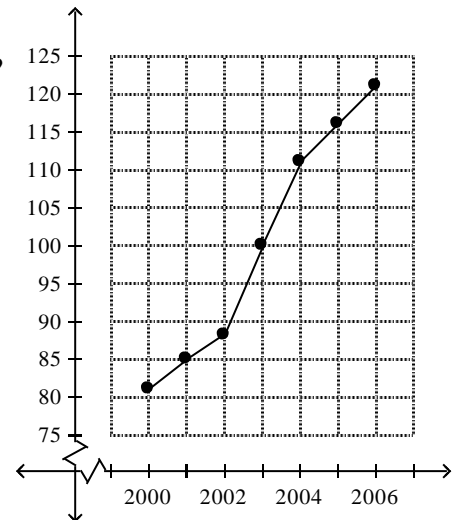


11. Determine the area of the composite figure. The curve is a semicircle.



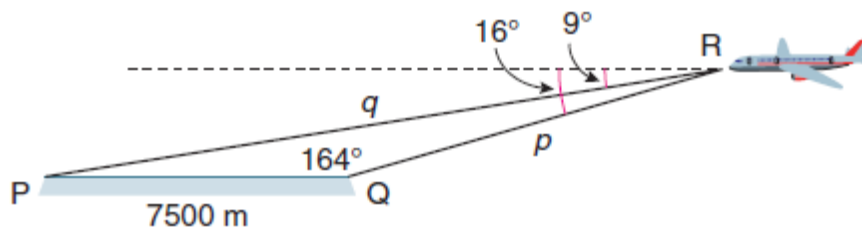
12. Suppose the graph shows an index of government spending on public health education.

- What is the base year for this index? How can you tell from the graph?
- By how much did the index change between 2000 and 2002?
- By how much did the index change between 2002 and 2004?
- By how much did the index change between 2004 and 2006?

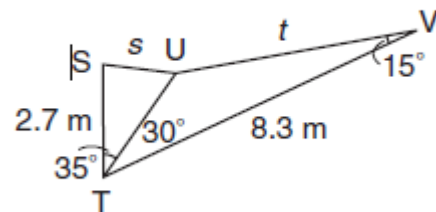


- Compare your answers to parts b, c, and d. Which period had the greatest increase in spending? How can you see this from the shape of the graph? Calculate the slope of the period with the greatest increase in spending.

13. A plane is approaching a 7500 m runway. The angles of depression to the ends of the runway are 9° and 16° . How far is the plane from each end of the runway?

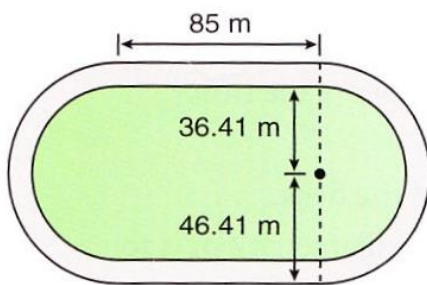


14. Determine the side lengths of s and t .



15. Cereal boxes are each 30 cm wide by 36 cm high by 14 cm deep. They are packed in a larger box that is 4 boxes wide, 4 boxes high, and 10 boxes deep for shipping. Determine the surface area of the shipping box.

16. The running track in this diagram consists of two parallel sections with semicircular sections at each end. Determine the area of the track.



17. For each table of values, decide whether the data model a linear, quadratic, or exponential relation. Consider first differences, second differences and growth/decay factors.

a)

x	1	2	3	4	5
y	3946.2	3354.3	2851.1	2423.5	2059.9

b)

x	1	2	3	4	5
y	4594.4	4546.2	4498.0	4449.8	4401.6

c)

x	10	15	20	25	30
y	-177.4	-6202.4	-14 637.4	-25 482.4	-38 737.4

18. Simplify first then evaluate for $x = 2$ and $y = -3$ and $z = 5$.

$$\frac{x^3 y^3 z}{xy^4 z^{-2}}$$

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19. The aspect ratio of a hang glider describes its performance during flight. The formula $R = \frac{s^2}{A}$, gives the aspect ratio, R , for a hang glider with wingspan s and wing area A .

a) Rearrange the formula to isolate s .

b) Jake wants to design a hang glider with an aspect ratio of 2.7 and a wing area of 30 square feet. What will be the wingspan of the glider?

20. Solve $25^{x+1} = 125^{x-2}$

21. Two bears rest on the ground 600 m apart. The first bear spots berries 25 m above the ground at an angle of elevation of 4° . The second bear spots the same berries. What is the angle of elevation at which the second bear spots the berries? Include a diagram.

22. John buys 120 feet of fencing to create a pen for his animals. He wants to enclose the maximum area possible.

a) What would be the dimensions and area of a rectangular pen?

Dimensions: _____

Area: _____

b) What would be the dimensions of a circular pen?

Radius: _____

Area: _____

c) Which pen should he choose? How much will it cost him to line the fence if material costs \$10/yard?

3 feet = 1 yard

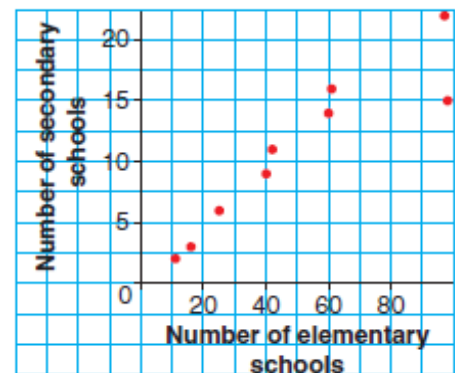
23. Use this scatter plot.

a) Describe the correlation as positive or negative.
Explain how you know.

b) Draw a line of best fit.

c) Can you use your line of best fit to determine how many secondary schools there are for every 120 elementary schools?
Explain.

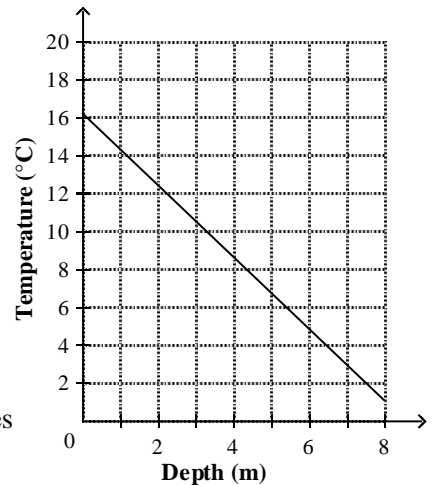
Schools in Nine Ontario School Districts



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24. A marine biologist measures the temperature at various depths below sea level. Her findings are shown in this graph.

- Describe the rate of change of the graph.
- Calculate the rate of change of temperature with respect to depth.
- Define your variables. Write an equation that describes the temperature-depth relation.
- Use your equation to determine the temperature at 4m. Check your response with the graph.
- Use your equation to determine the depth when the temperature is 8 degrees Celsius. Check your response with the graph.



25. newspaper columnist wants to find out what people think of a proposed by-law that would limit the height of fences they can build in their yards. Is the survey he writes in his column biased? Why or why not?

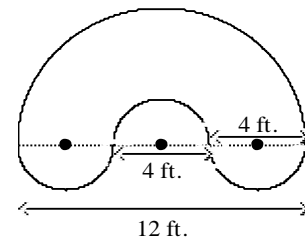
Once again the government is trying to control us. This time they are interfering with our backyards. Do you agree with the proposed law to limit the height of a fence residents can put up in their yards to 2.44 m?

Circle Your answer - No Yes

26. Do the following items represent income or an expense. Explain.

- | | |
|-----------------|----------------------|
| a. Loan payment | b. Investment income |
| c. Scholarship | d. Rent |

27. Find the area of this composite figure:



28. a) How much protective-shrink wrap is needed to cover this bale of hay if the wrap does not cover the ends of the roll?



- b) Suppose protective-shrink wrap is sold by the square metre. How many square metres are needed to cover the bale as described in part a?

1 foot = 0.3048 m

